WEBBER'S second explanation was disproved by EMERSON[13] as follows. A colorless, sugary type, *CCrrsusu*, was used as female parent in a cross with a colorless, starchy type, *ccRRSuSu*. The resulting grains were red, starchy, save for a few aberrant grains which were red in part and colorless in part but starchy throughout. WEBBER'S second explanation fails here, since fusion of the second male nucleus with only one of the polars would produce grains which were red, starchy in part (from male nucleus fused with one polar) and colorless sweet in part (from independent polar).

These two critical experiments serve to disprove WEBBER'S explanations and demonstrate that the normal program of double fertilization is invariable in corn. The next thing which was invoked to explain these aberrant grains was "somatic mutation" in the endosperm, but for several reasons this was unsatisfactory as an explanation.

EMERSON[14] has finally obtained critical evidence which indicates a very satisfactory explanation of the phenomenon. The factor *wx* for waxy endosperm (*Wx*, corneous endosperm) is known to be carried on the same chromosome with the *C* factor. A cross was made between a colorless, waxy female parent, *c-wx c-wx* and a red corneous male parent, *C-Wx C-Wx* (the *R* factor being present in both parents). The resulting triploid endosperm was of the formula *c-wx C-wx C-Wx*. If non-disjunction (passing of both halves of a divided chromosome to one pole) occurred in connection with the third of these chromosomes, one of the resulting nuclei would be diploid for this chromosome set. *c-wx c-wx*, and the other tetraploid, *c-wx c-wx C-Wx C-Wx*. Endosperm produced by the former should be colorless, waxy; endosperm produced by the latter should be red, corneous. Emerson obtained aberrant grains which were of exactly this constitution, the colorless areas being at the same time waxy, and the red areas corneous. This experiment, considered together with the previous ones, indicates that occasional non-disjunction is the explanation of these aberrant grains. The frequency of these particular aberrant grains is one in 423, and one may expect non-disjunction to take place in connection with some one chromosome in the corn endosperm in about one of every fourteen grains. Direct cytological demonstration is to be hoped for. Non-disjunction is known to occur at times elsewhere in the plant and animal kingdoms. Possibly the triploid nature of endosperm furnishes an especially favorable condition for its occurrence.—M. C. COULTER.

Prairie vegetation.—The prairies of Illinois, occurring as they do on the tension line between great forest and and grassland formations of North America, afford peculiar advantages in the study of the development of this

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[13] EMERSON, R. A., Anomalous endosperm development and the phenomenon of bud sports. Zeit. Induk. Abstamm. Vererb. **14**:241–259. 1915.

[14] EMERSON, R. A., Genetic evidence of aberrant chromosome behavior in maize endosperm. Amer. Jour. Bot. **8**:411–424. *fig. 1.* 1921.

type of vegetation. In a recent article SAMPSON[15] has made an excellent contribution to our knowledge of these rapidly disappearing grasslands. He found, in various parts of the state, remnants of the original prairie grasslands varying in size from strips along roadways and railways to tracts of hundreds or even thousands of acres in extent. Some of the largest areas were on the floodplain of the Mississippi River and occur even within the city limits of Chicago. The principal virgin areas were visited during the summers of 1915–18 and carefully studied.

The most notable contribution appears in a very complete explanation of the dynamics of these grasslands. Two main lines of succession are recognized, the hydrarch and xerarch, with a common climax association type in which *Andropogon furcatus* is dominant. The hydrarch succession commonly begins with an association dominated by *Scirpus fluviatilis*, succeeded by others in which *Spartina Michauxiana* or *Calamagrostis canadensis* is abundant. In the subclimax *Panicum virgatum* or *Agrostis alba* may be most conspicuous. Variations in the intermediate stages occur and are illustrated by examples.

Owing to the agricultural value of the upland prairie areas the xerarch succession is not so easily solved, although there is abundant evidence of the nature of the climax association. Mixtures of herbaceous species with few grasses seem to be the probable pioneer forms, with a mixed aggregation of grasses or a comparatively pure stand of *Andropogon scoparius* as the intermediate stage.

The present abundance of *Poa*, appearing both as the dominance of *P. pratensis* in the climax association and of *P. compressa* in the subclimax of the xerarch succession, is shown to be due to man's influence in cutting and grazing. The retrogressions due to grazing, as well as the various types of succession, are made clear by numerous diagrams, by floristic analyses of the various associations, and by an annotated list of the principal species.

A very commendable feature of the report is a non-technical summary in which the main results of the study, including the principal successions, are stated in terms intelligible to the ordinary citizen acquainted with the prairies but without botanical training. A series of excellent plates also add to the interest and value of the report.—G. D. FULLER.

Taxonomic notes.—The collection of plants made by COMPTON in New Caledonia and the Isle of Pines in 1914 is being published by various taxonomists, the first part containing the Angiosperms by RENDLE, BAKER, and MOORE.[16] It includes 830 species, 230 of which are new. The ten new genera

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[15] SAMPSON, H. C., An ecological survey of the prairie vegetation of Illinois. Ill. Dept. Regist. and Educ. Div. Nat. Hist. Surv. Bull. **13**:523–577. *pls. 48–77. figs. 9.* 1921.

[16] A systematic account of the plants collected in New Caledonia and the Isle of Pines by Professor R. H. COMPTON in 1914. Part I. Flowering plants (Angiosperms), by RENDLE, A. B., BAKER, E. G., and MOORE, S. LEM. Jour. Linn. Soc. **45**:245–417. *pls. 13–24.* 1921.